

THE TRUTH ABOUT THE IKEA EFFECT: WHEN LABOR DOES NOT LEAD TO LOVE

by

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Abstract

Managers' increased interest in exploiting consumers' labor in cook-your-own-food restaurants and harvest-your-own-vegetable fields is theoretically rooted in a stream of research called effort justification. For many years, research centered on effort justification has focused on the relationship between the effort one puts into a task and the resultant valuation of the task's outcome arguing that effort increases the favorable valuation (e.g. Aronson and Mills 1959; Alessandri, Darcheville, and Zentall 2008; Lydall, Gilmour, and Dwyer 2010; and Norton, Mochon, Ariely 2012). However, little research has focused on the inverse phenomenon where the effort does not result in a heightened favorable valuation of the outcome. Extending the previous findings, it is asserted that effort does not always increase the favorable valuation of the outcome and it happens only when the effort is not a threatening factor to one's resources. In the following research, the effect of threatening effort on the valuation of the effort's outcome is discussed. This threatening effort targets one's self-esteem as one of the resources owned by any individual (Hobfoll 1989) and poses a threat to it. In detail, when the expectations of the outcome of the effort are negatively disconfirmed, one's self esteem is threatened to the extent that the person attributes the reason for disconfirmation to an internal reason (Weiner 1985). This threat to self-esteem is reflected negatively in the reduced valuation of its outcome. The hypotheses are built upon the conservation of resources theory (Hobfoll 1989) and Weiner's (1985) attribution theory of achievement and motivation. Results from three studies, one pretest and two main studies, show that threatening labor, the one that is coupled with expectation disconfirmation, reduces the favorable variation of the outcome, while non-threatening labor increases the favorable valuation.

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Introduction

“The grapes are sour anyway”, fox said. Perhaps the story of The Fox and the Grapes is one of the earliest stories depicting the concept of cognitive dissonance. In this story, a fox desires some good looking grapes, but unfortunately these grapes are not accessible to him. The poor fox of the story, in order to forget about those grapes starts to push himself to believe that those grapes are sour anyway. Inspired from such stories in real life, academics have paid great attention to such situations and tried to explain them. This in part led to the theory of Cognitive Dissonance (Festinger 1957) which argues that the dissonance in cognitions results in a psychological state of discomfort followed by efforts to reduce this dissonance. The fox of the story, unaware of this theory, applied this theory by saying that the grapes are sour to decrease the dissonance between the desires for grapes and his lack of ability to gain them. When grapes are sour, who wants to get them, right?

Applying this theory to contexts in which people exert effort, research has observed that individuals who exert effort try to reduce the dissonance between their effort and the praise they receive by valuing the outcome of their effort favorably regardless of the external evaluations of their performance (Aronson and Mills 1959; Lodewijkx and Syroit 2001; Alessandri, Darcheville, and Zentall 2008; and Lydall, Gilmour, and Dwyer 2010). This phenomenon has been labeled “effort justification”. Based on the aforementioned research in this field, the more effort individuals put into a task, the more they are prone to favorably evaluate the outcome.

Although most of the research to date has emphasized that effort increases the favorable valuation of the outcome, this current paper aims to explore situations in which effort reduces the favorable valuation of the outcome. In the following sections, first a literature review of the field

is presented and the gap within this literature is addressed. This is followed by the hypotheses development and by three completed studies, one pretest and two main studies. The research concludes with a discussion and ideas for future research.

Literature Review

One of the earliest theories explaining how consumers make their choice of product and evaluate different products bundles is the theory of consumer choice in microeconomics. Two measures of economic value are WTP (willingness to pay) and WTA (willingness to accept compensation). Based on Brown and Gregory (1999), WTP is defined as the maximum amount of money that an individual is willing to pay to acquire a good, while WTA “reflects the minimum monetary amount required to relinquish the good” (page 323). The theory of consumer choice suggests that WTP must be equal to WTA. However, a great body of research has shown that these two measures of economic value vary in some situations (Brown and Gregory 1999; Hoffman and Spitzer 1990; Okada 2010 and Whynes and Sach 2007).

One important line of research which followed the same argument underlying the context in which WTP and WTA are different is the research presented by Franke et al. (2010). The “I designed it myself” effect theorizes that “awareness of being the creator of the product design” leads to a higher valuation for customers (page 125). Additionally, Schindler (1998) points out that if customers feel that they are responsible for acquiring a discount, this will boost affect and positive feelings resulting in future potential repurchase. All these examples based on the literature put forth factors which result in WTA to be different from (particularly, more than) WTP.

One distinctive area of research depicting the disparity between WTP and WTA is centered on effort justification. Effort justification has stemmed from the theory of cognitive

dissonance proposed by Festinger (1957). Individuals seek internal self-consistency and in the event that they face inconsistency, renamed by Festinger as dissonance. This dissonance and the resultant feelings of psychological discomfort motivates people to reduce the dissonance. This dissonance is defined by Festinger as “the existing of non-fitting relations among cognitions” (page 3). In order to offer an example of cognitive dissonance theory, consider a smoker who realizes smoking is detrimental to his health. Based on the theory, this dissonance between the belief (smoking is detrimental to health) and the behavior (smoking) should normally result in the person’s effort to reduce the dissonance. In order to do this, the smoker has two options, either to quit smoking or justify the consequences of smoking by saying that for instance “smoking has nothing to do with health”, “doctors who claim that smoking is bad smoke themselves all the time”, or “maybe smoking is not the main reason for cancer”.

Effort justification emphasizes that there is a relationship between the amount of effort put into a task and one’s valuation of the outcome of the task in the way that people attribute higher value to the outcome of the harder task. For example, Alessandri, Darcheville, and Zentall (2008) argue that a student receiving an A in a difficult course such as organic chemistry would value the mark more than the same student receiving an A in the introduction to Golf course. Effort justification can also be explained by the theory of cognitive dissonance. The essence of the theory of cognitive dissonance is consistency. One of the consistencies in the real world is the consistency between the effort and reward meaning that higher effort is expected to be followed by a higher reward. For example, when two students are competing for a reward, the student who has worked harder is expected to receive the higher reward. If high effort is not reciprocated by a high reward, the theory of cognitive dissonance suggests that this dissonance between the received reward and expected reward induces a feeling of psychological discomfort.

In order to reduce this dissonance, one attributes higher subjective value to the outcome to compensate for the lack of a received reward.

The literature has focused great attention on the effort justification topic. Aronson and Mills (1959) were one of the first attempting to verify the hypothesis whether those who face difficulty attaining a goal value the goal more favorably. Participants joined three groups differing in the difficulty of initiation- severe initiation, mild initiation and control group and results found that those who entered the discussion of the group with a severe initiation (which required more effort), valued the group and its discussions more favorably. As a result, Aronson and Mills (1959) argued that people attribute higher value to the more difficult task which provides support for the relationship between effort and favorable valuation of the outcome.

The paper written by Aronson and Mills (1959) was one of the pivotal papers in the field of effort justification on which other research to date has been built. However, this paper has received some critiques. Lodewijkx and Syroit (2001) asserted that some social factors are perhaps the reason why people in the severe initiation group evaluate the discussions of the group more favorably. They based their argument on affiliation theory wherein people tend to affiliate with social groups to satisfy their need for belonging and under threat, this need for affiliation is heightened. In the Aronson and Mills (1959) experiment, participants' reading the embarrassing content works as a threatening factor increasing the need for affiliation. As a result, these researchers argue that the reason for the higher favorable valuation might be the satisfaction of this need for affiliation and not effort justification.

In order to rule out this criticism, Alessandri, Darcheville, and Zentall (2008) designed an experiment in which children were the participants. Since children's understanding of their social environment is not considered to be fully developed and they lack the previous experience that

adults have, the social context can be ruled out. In order to intensify the isolation from the social context, they placed children in separate places and confirmed that the justification-of-effort effect can also happen in an asocial context. Lydall, Gilmour, and Dwyer (2010) further explained that complex cognitive processing is not necessarily needed for the effort-justification effect to happen by utilizing rats to rule out the role of complex cognitive accounts. Since rats are considered not to act based on complex cognitive processes, the authors concluded that effort justification does not need complex cognitive processes to happen. Consequently, based on Lydall, Gilmour, and Dwyer (2010), complex cognitive processing is not needed for effort justification to happen.

Most research discusses the nature of the effort that is required for effort justification, whether it is mere labor that initiates the effort justification (Norton, Mochon and Ariely 2012) or it is the effort without cognitive processing (Lydall, Gilmour, and Dwyer 2010) or without a social context (Alessandri, Darcheville, and Zentall 2008). However, there is a general consensus among that higher effort results in a higher evaluation. As a result, the first hypothesis of this current work is a replication of previous findings.

H1: High effort results in a more favorable evaluation of the outcome as compared to low effort.

Norton, Mochon and Ariely (2012) extended this work and further postulated that only the physical exertion of effort or labor is sufficient for effort justification to happen. Calling this phenomenon the “IKEA effect”, the authors argue that people value products that they have assembled themselves more than those which have been assembled as the result of others’ labor. Norton, Mochon, Ariely (2012) also proposed that labor does not necessarily lead to love of the outcome, and completion of the task is also required. They account for the human need for

effectance as the underlying factor. They define the need for effectance as “the ability to successfully produce desired outcomes in one's environment” (page 454). The authors contend that one of the ways of satisfying this need for effectance is by successfully completing the task. As a result, labor must be accompanied by the successful completion of the task and according to their argument, only successfully completed labor increases the favorable valuation of the task.

However, one major issue that seems to be overlooked by the previous literature is the type of effort used in the literature thus far has always been one that adds to participants' resources and is in no way threatening. For instance, Lodewijkx and Syroit (2001) argue that participants in the study of Aronson and Mills (1959) favorably evaluated their effort because it satisfied their sense of affiliation with a group. In Lydall, Gilmour, and Dwyer (2010), rats exerted effort to obtain sucrose. Moreover, Norton, Mochon and Ariely (2012) put forth the fact that when consumers put in effort and complete the task, their “sense of effectance” is satisfied. In the current research, however, I explore a different kind of effort, one that threatens resources. Moreover, the following work also extends the latest insightful findings of Norton, Mochon, and Ariely (2012) hypothesizing that there are some situations in which a person successfully completes the task but does not evaluate the outcome as favorably as the literature suggests. Indeed, there are some situations where one puts high effort into a task and completes it, yet this person does not have a high favorable valuation predicted by literature.

In order to understand the effect of threatening labor on their valuation of the outcome of their labor, one should first recognize how individuals react to any threat to their resources. Conservation of the Resources theory (Hobfoll 1989) argues that stress is produced when resources are threatened, reduced, or the loss of resources outweighs the gain of resources. Consequently, stress is related to resource management Hobfoll and Jackson's (1991). This

theory suggested by Hobfoll (1988; 1989; 2001) emphasizes that “people strive to retain, protect, and build resources and that what is threatening to them is the potential or actual loss of these valued resources” (page 516). Hobfoll suggests that resources include objects, personal characteristics, conditions and energies. Objects are resources which are either of value themselves or because they facilitate acquiring other resources. For example, an ordinary car helps its owner in transportation, while a luxury car is a symbol of status and helps its owner acquire social status. Personal characteristics are the second type of resources and self-esteem is a well-known example of them. Based on Hobfoll (1989), conditions are also categorized as resources and he offers marriage, tenure and superiority as the examples of such resources. Lastly, energies are categorized as another type of resource and they constitute time, money and so on which facilitate gaining other resources.

Hobfoll (1989) also suggests that not only do individuals tend to conserve their resources, but also they seek to add to their resources in order to cope with future probable losses or threats to their resources. Hobfoll also addresses how stress appears in the first place. When someone experiences resource loss or threat to resources, or gains resources less than or equal to what they lose (or invest), this person is a potential case for stress (Hobfoll and Jackson 1991). One important point which must be taken into account is the fact that even in the situations where resource losses and gains are equal, stress is again the result because losses have more effect than gains which is consistent with human beings’ tendency to be loss-averse (Thaler 1980).

Hobfoll (1989) suggests that in order to cope with this stress and conserve resources, people deploy different mechanisms such as shifting the focus of attention or reevaluating resources. Hobfoll (1989) suggests that individuals always calculate the net threat to their resources by subtracting losses of their resources from gains and if losses outweighs gains or are

equal to them, individuals feel threatened and experience stress. However, in the event that individuals feel threatened, using the strategy of shifting attentional focus, people focus more on what they have gained rather than what they have lost in order to reduce their net resource loss. For example, when the contestant of a TV show fails to win, this person would focus on the fun of being on a TV show rather than losing the prize so that the resources are balanced (fun versus money). In terms of the generalizability of this strategy, Hobfoll argues that it does not happen for all stressors.

Another strategy in Hobfoll's (1989) paper that individuals deploy to cope with the stress is resource re-evaluation. For example, he claims that "the stress of school failure can be mitigated by lowering the value placed on education" (page 519). In fact, the value of education is reduced so that the loss of not acquiring it diminishes. Returning to the example of a TV show, using this second strategy, the contestant would devalue their need for a prize. As a result, to cope with the stress of losing the prize, the person will reevaluate the importance of the prize. No matter what the strategies that individuals use to cope with the stress of the labor are, as Hobfoll (1989) argues, they will turn against the stressor.

Building on this, it is hypothesized that if labor acts as a threatening factor to one's resources, it will be evaluated negatively. It must be noted that threat and the loss of resources are related, but they are not the same. Threat to resources is the outcome of the subtraction of losses from gains. As a result, we might have a loss of resources in a non-threatening labor situation when the gains of resources are more than the losses. Therefore,

H2: Labor that is threatening to one's resources reduces the favorable valuation of the outcome as compared to the labor that is not threatening.

In order to test the hypotheses of this research, first a resource must be chosen and, then, a kind of labor threatening this resource must be identified.

Self Esteem as a Resource

The resource chosen for the current work is “self-esteem” (suggested by Hobfoll 1989) to be one of humans’ resources) and the kind of labor threatening this resource is the one in which the expectations of the outcome of the labor are negatively disconfirmed and the reason for this negative disconfirmation is attributed to an internal factor (predicted by Weiner’s 1985) theory of attribution). The construct of expectation disconfirmation and Weiner’s (1985) theory of attribution are discussed in the following section.

Expectations and the role of expectations in satisfaction judgments has been studied extensively (e.g. Aronson and Carlsmith 1962; Weaver and Brickman 1974; and Oliver and DeSarbo 1988). According to Szymanski and Henard (2001), expectations can affect satisfaction judgments in two ways, through anticipation and expectation disconfirmation. The role of expectation disconfirmation on evaluations is also well studied in the literature (e.g. Oliver 1977; Oliver 1980; and Oliver & Swan 1989). According to Oliver (1980), positive (negative) expectation disconfirmation happens when the performance criteria of a product does (not) meet the expectations developed for it. Borrowing this construct from Oliver (1980), expectation disconfirmation for the context of the current research occurs when the expectations of the task outcome are not met. Weiner’s (1980; 1983; 1985) theory of attribution suggests how individuals react in the event of expectation disconfirmation.

In his paper, Weiner (1985) argues that individuals are obsessed with asking “why” questions regarding the phenomenon happening to them. He underlines that when individuals

face expectation disconfirmation, they are prone to engage in a causal search in order to attribute the reason for their disconfirmation to their causes and different ways of causal attributions arouse various types of emotions. Weiner's (1985) theory suggests that to the extent that individuals perceive the cause of the phenomenon as stable, controllable and internal, they experience different types of emotions. In other words, different causal attributions affect the experienced emotions which motivate different resultant behaviors. In one part of his theory, Weiner talks about the locus, whether the reason for the outcome is internal or external. For example, if a student expects to receive A+ for a paper, and receives a C, the outcome is highly unexpected, and this leads the student to engage in a causal search. If this student attributes the reason for this expectation disconfirmation to his lack of effort, this person has attributed the reason for this disconfirmation to an internal factor, while attributing it to the test\paper difficulty would be an external attribution. Weiner's (1985) theory predicts that to the extent that individuals attribute the cause of this disconfirmation to an internal or external factor, it threatens the person's self-esteem.

Based in part on this, threatening labor should have two features. First, it should negatively disconfirm individuals' expectations. Second, it should make people attribute the reason for this negative disconfirmation to an internal factor. If any kind of labor carries these two criteria, Weiner's (1985) theory of attribution suggests that this kind of labor threatens one's self-esteem. Therefore, it is expected:

H3: When expectations of the outcome of labor are negatively disconfirmed, the favorable valuation of the outcome reduces as compared to situations in which expectations are positively disconfirmed.

In the first study, I replicate previous findings to show whether labor leads to love in the settings that were chosen for the study, which aims to verify H1. Then, in the second study, I examine whether labor acts as a threatening factor when the expectations of the labor's outcome are negatively disconfirmed, thereby reducing the favorable valuation of the outcome (H2 and H3). In addition, the third study aims to investigate the effect in a context in which the internal attribution requirement of the theory is relaxed.

Methodology

Pretest

This study was a one-way between subjects design (high vs. low effort) with willingness to pay as the dependent variable. The goal of this study was to replicate prior findings that higher effort results in higher favorable valuation of the task outcome intended to be used for the main study. Participants (N=59, M=32 and F=27) were university students taking the introduction to marketing course at the Asper School of Business at University of Manitoba in the Winter 2013 semester. These participants took part in the studies conducted in exchange for course credit. This study was approved by the Joint Faculty Research Ethics Board and participants gave their consent to participate and were debriefed after the study was completed

Participants were asked to finish a painting and then put a price on their painting as if it was about to be sold in a charity event. Participants were randomly assigned to two conditions of high and low effort. In the low effort condition, participants painted the picture of a fish using three main colors of red, blue and yellow (study materials can be found in Appendix-A). They were provided with extra brushes so that they did not have to do any cleaning so that the task

was as easy as possible. In the high effort condition, participants had to do some extra work. First, they had to mix the paints to get the colors of purple, orange and green. Then, they had to cut the painting out and glue it to another surface. Moreover, they were not provided with extra brushes and they had to clean their brushes between colors. Lastly, the instructions to complete the task of the study were difficult to follow, which according to Norton et al. (2012) increased the effort put in by participants. After finishing the task, participants were told that their paintings were about to be sold in a charity event in the Asper School of Business and were asked to put a price on their painting.

Measures

Participants' price for their paintings was used as the measure of their valuation of the outcome based on Norton et al. (2012). The manipulation check to show the difference between the low and high effort conditions was the time taken to complete the task.

Results and Discussion

Preliminary Analysis

The manipulation check for effort was successful as it took participants in the high effort condition ($M=23.03$ minutes) significantly more time than participants in the low effort condition ($M=9.45$ minutes) to complete their task ($F(1, 66) = 62.914, p=0.000$).

Hypothesis Testing

Results of a one-way analysis of variance (ANOVA) showed that low effort ($M=3.42$) participants valued their painting significantly higher than high effort participants ($M=6.14, F(1,57)=4.764, p=0.033$) which provides support for H1 and replicates previous findings that effort increases the favorable valuation of the outcome.

In the next study, I introduce the threat element and investigate its effect on the valuation in order to focus on H2. The goal of this study is to establish the fact that when the labor is threatening, it reduces the favorable valuation of the outcome. Particularly, in the event of negative expectation disconfirmation, the labor reduces the favorable valuation of the outcome providing support for H3. Weiner's theory of attribution suggests that when one's expectations are disconfirmed and this person attributes it to an internal factor, the self is threatened. As a result, this study was designed in the way that, first, participants' expectations were disconfirmed (positively or negatively) and, then, they were given some information suggesting that the reason for that disconfirmation was due to themselves, increasing the chance that participants' would attribute the reason for their disconfirmation to an internal factor.

This way of threatening the self not only has the theoretical support discussed in the paper, but also has been used previously. For instance, Laws and Rivera (2012) gave their participants predetermined high and low marks to create a threat to their self and then investigated its effect on participants' attitudes toward a product. However, one point seems to be overlooked by Laws and Rivera (2012). They give participants predetermined high and low marks. However, I believe this procedure results in different level of threat that one cannot control for. For example, imagine that the high predetermined mark is 18 and the low predetermined mark is 10. As a participant, if I expect to get an 18 and receive this mark, I will definitely feel differently from the participant who expects to get 13 but gets 18. In order to control for this issue, I decided to disconfirm each participant's expectations individually, but for the same amount of 5 in a scale of 20. For example, if a participant indicated that they expected to get a 13 and was in the positive disconfirmation condition, the participant received an 18 (13 plus 5) and if in the negative disconfirmation condition the participant received 8 (13 minus 5).

Study 1

This study was a 2(Effort: high vs. low) × 2(Expectation disconfirmation: negative vs. positive) between participants design. Participants (N=71, Female=32, Male=39) were university students taking the introduction to marketing course at the Asper School of Business at University of Manitoba in the 2013 Summer semester. These participants took part in the studies in exchange for course credit.

In this study (study materials can be found in Appendix-B), there were four conditions, low effort-positive disconfirmation, low-effort-negative disconfirmation, high effort-positive disconfirmation and high effort-negative disconfirmation. As in the pretest, all participants completed a painting. Then, participants were randomly assigned to the negative or positive expectation disconfirmation conditions. After finishing the painting task, participants were asked to evaluate their painting using a number from 1 to 20. Then, I took a photograph of their painting in front of them and participants were told that their painting was being sent electronically to a professional in the art department to be evaluated.

Some minutes later, the evaluation of the expert was sent back to participants through the printer (the feedback pages along with study materials can be found in the Appendix-B). Meanwhile, participants read material suggesting how professionally designed the study and materials were. The goal of this was so that participants would infer that any result coming out of their effort was internally attributed. As argued earlier, although disconfirmation still poses threat to self (as used by Laws and Rivera 2012), Weiner (1985) suggests that the magnitude of this threat is directly related to the extent that this disconfirmation is attributed to an internal factor. Evaluations were randomly assigned and either confirmed or disconfirmed the mark that participants had given themselves. Then, participants were asked to express the price they would

put on their painting if their painting was about to be sold in a charity event at the Asper School of Business.

Measures

Similar to the pretest, participants' price put on the painting was used as the measure of their valuation of the outcome. The manipulation check for effort was also the same as in the pretest and was the time taken to complete the task. Further, there was a five-item scale asking the amount of effort that participants invested in the task for manipulation check for the amount of effort devoted. In particular, participants were asked to rate five statements on a Likert scale ranging from 0 (not at all) to 5 (very much). These statements asked participants whether the task was effortful, or energy-consuming, and whether they put lots of effort in the task, or the task needed hard work as well as a reversed item asking whether the task needed little effort ($\alpha=0.732$).

A single item measure was used as the manipulation check of expectation disconfirmation based on the work of Oliver (1977). After receiving the art professional's feedback, participants expressed the extent to which their expectation was confirmed or disconfirmed on a seven-point scale where 1=much worse than expected and 7 = much better than expected.

Now that the expectation disconfirmation was manipulated, according to Weiner's (1985) theory of attribution, people should attribute this disconfirmation to an internal factor so that their self-esteem is threatened. A five-item measure of dispositional attribution was developed based in part on Weiner (1985). According to this theory, internal factors are those which are related to the self rather than others or the environment. Participants were asked to rate statements evaluating the extent to which the feedback they received was because of their own

effort, their own involvement in the task, their own energy invested in the task, their own ability in painting and whether they are better in other skills except painting on a Likert scale from 0 (not at all) to 5 (very much) ($\alpha = 0.804$). The goal was that everyone in the experiment should have attributed the reason for the disconfirmation to an internal factor.

Results

Preliminary Analysis

Outlier analysis on time was conducted and participants who took more than three standard deviation above or below the mean time for completion for the study were deleted ($N=6$). Results of a univariate analysis of variance showed a main effect of time where participants in the high effort condition ($M=31.06$ minutes) spent more time than participants in the low effort condition ($M=18.56$ minutes) to complete their task ($F(1, 68) = 22.372, p=0.000$). Unexpectedly, there was also a significant interaction of the type of effort and disconfirmation on time where $M_{\text{low effort, negative disconfirmation}} = 21.353$, $M_{\text{high effort, positive disconfirmation}} = 34.547$, $M_{\text{high effort, negative disconfirmation}} = 26.612$, $M_{\text{low effort, positive disconfirmation}} = 16.102$ ($F(1,68)=6.923, P=0.011$). The second manipulation check for effort shows only a marginally significant main effect of effort ($F(1,68)=2.658, p=0.1, M_{\text{low-effort}}=3.51$ and $M_{\text{high-effort}}=3.97$). The 2x2 ANOVA for the manipulation check for expectation disconfirmation indicated only a significant main effect of expectancy disconfirmation where participants in the negative disconfirmation condition ($M=2.61$) expressed significantly lower scores from those in positive disconfirmation condition ($M= 6.42, F(1,67)=141.425, p=0.000$).

As suggested by theory, disconfirmation must be attributed to an internal factor for the effects of disconfirmation on the self to occur. Participants' attributions shows no differences between the groups ($F(1,68)=0.025, p= 0.874, M_{\text{low effort, negative disconfirmation}} = 3.0353, M_{\text{low effort,$

positive disconfirmation= 4.0526, $M_{\text{High effort, negative disconfirmation}} = 3.5375$, $M_{\text{High effort, positive disconfirmation}} = 4.4550$).

Hypothesis Testing

As predicted, results of a 2 (effort) x 2 (expectation disconfirmation) univariate analysis of variance revealed a significant interaction on price ($F(1,67)=6.113$, $p=0.016$) which is depicted in Figure 1. The prices put on the paintings were significantly different with the lowest prices in the high-effort/negative disconfirmation condition ($M=2.85$) and highest in the high-effort/positive disconfirmation condition ($M=10.289$, $F(1,67)=4.911$, $p=0.004$) which provides support for H2 and H3. Moreover, the simple effects analysis demonstrates that the type of disconfirmation had no significance difference for low effort conditions ($M_{\text{low effort, negative disconfirmation}} = 4.599$, $M_{\text{low effort, positive disconfirmation}} = 4.728$), while it had a significant difference in the high effort conditions ($(F(1,68)=12.124$, $p=0.001)$, $M_{\text{high effort, negative disconfirmation}} = 2.85$, $M_{\text{high effort, positive disconfirmation}} = 10.075$) which was expected because according to the theory, low effort induces the low perceived value which its disconfirmation should not have a negative effect.

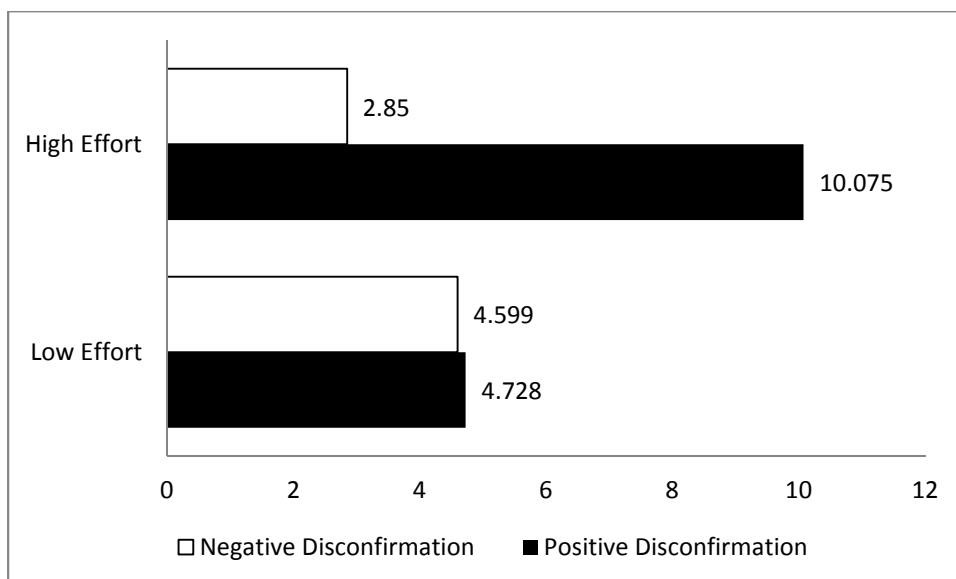


Figure 1- 2x2 ANOVA, DV: Price, IVs= Type of effort, Type of Disconfirmation

Information about the means and standard deviations of DV (price) in each of the above conditions can be found in the following table:

Type of Effort	Disconfirmation	Mean	Standard Deviation	N
Low	Negative	4.5994	4.97740	17
	Positive	4.7284	4.95587	19
	Total	4.6675	4.89499	36
High	Negative	2.8500	3.78858	16
	Positive	10.0745	9.02721	20
	Total	6.8636	7.97776	36
Total	Negative	3.7512	4.46135	33
	Positive	7.4700	7.72707	39
	Total	5.7656	6.66397	72

Table 1- Means and Standard Deviations of DV in each Condition of the Study

Also, in the table below the bivariate correlations among variables of the study can be found.

Bivariate Correlations

	Type of Effort	Type of Disconfirmation	DV (Price)	Situational Attribution	Satisfaction	SelfEsteem	Task Enjoyment	Task Effort
Type of Effort	Pearson Correlation	1	.166	.170	.048	-.143	-.007	.202
	Sig. (2-tailed)		.816	.154	.690	.230	.951	.090
	N	72	72	72	72	72	72	72
Type of Disconfirmation	Pearson Correlation	.028	1	.280*	.349**	.313**	.175	.253*
	Sig. (2-tailed)	.816		.017	.003	.008	.142	.088
	N	72	72	72	72	72	72	72
DV (Price)	Pearson Correlation	.166	.280*	1	.124	.294*	.080	.167
	Sig. (2-tailed)	.164	.017		.300	.012	.506	.321
	N	72	72	72	72	72	72	72
Situational Attribution	Pearson Correlation	.170	.349**	.124	1	.322**	.113	-.030
	Sig. (2-tailed)	.154	.003	.300		.006	.346	.803
	N	72	72	72	72	72	72	72
Satisfaction	Pearson Correlation	.048	.294*	.322**	.322**	1	.480**	.420**
	Sig. (2-tailed)							
	N							

	Sig. (2-tailed)	.690	.008	.012	.006		.000	.000	.001
	N	72	72	72	72	72	72	72	72
Self Esteem	Pearson Correlation	-.143	.175	.080	.113	.480**	1	.103	.048
	Sig. (2-tailed)	.230	.142	.506	.346	.000		.390	.689
	N	72	72	72	72	72	72	72	72
Task Enjoyment	Pearson Correlation	-.007	.203	.167	-.030	.420**	.103	1	.502**
	Sig. (2-tailed)	.951	.088	.161	.803	.000	.390		.000
	N	72	72	72	72	72	72	72	72
Task Effort	Pearson Correlation	.202	.253*	.119	.168	.369**	.048	.502**	1
	Sig. (2-tailed)	.090	.032	.321	.159	.001	.689	.000	
	N	72	72	72	72	72	72	72	72

*. Correlation is significant at the 0.05 level (2-tailed).

** . Correlation is significant at the 0.01 level (2-tailed).

Table 2- Bivariate Pearson Correlations Among Variables

Role of Satisfaction and Task Enjoyment

To rule out the possibility that the enjoyment of the task differed among the conditions, study 1 used the measure of task enjoyment developed by Duda and Nicholls (1992) and measure of satisfaction put forth by Brockman (1998). The 2x2 ANOVA indicated that there was no significant difference on task enjoyment ($F(1,68) = 0.030$, $p = 0.863$) or on satisfaction ($F(1,68) = 1.459$, $P = 0.231$).

Supplementary Analyses

Despite the fact that this study was aimed to capture the moderating role of expectancy disconfirmation as a way of posing threat to an individual, measures of self-esteem and changes in self-esteem were included in the study to provide preliminary evidence for the construct of threat and to guide next steps to investigate the mediating role of threat. The construct of the threat to self, which is measured by self-esteem and threat to it, indicates some potential difficulties. Previous research such as done by Erol and Orth (2011) argue that self-esteem changes according to age and its level changes very difficultly. Moreover, Anderson and

Galinsky (2006) emphasize that the construct of self-esteem is difficult to change by experimental manipulation. They emphasize that the only solution for this problem is to define the elements of the measure for self-esteem to be context specific. The other example supporting this problem of changing global self-esteem is the work of Wild, Flisher, Bhana and Lombard (2004) where these authors argue that domain-specific components of self-esteem are easier to improve than the general self-esteem. Because of this difficulty of handling this construct, I decided to not only directly measure self-esteem and threat, but to also measure it indirectly. In the following, first the indirect evidence is introduced and then the direct measurement is discussed.

In terms of the theory behind the indirect measure of threat, the work of Sherwood (1981) is addressed contending that human beings use “projection” as the part of their defense mechanism in which they attribute their weaknesses to others so that they can escape the “psychological threat”. This well-established argument (for an extensive review, please refer to Holmes (1968)) explains that in the event of psychological threat, individuals tend to project their shortcomings on others as part of their defensive mechanism to protect the self. In the same way, I predicted that the same pattern must be evident in this work because the element of threat is the main tenet of this research. As a result, the situational attribution of participants was measured and the findings are addressed in the following.

Direct and Indirect Measures of Threat to Resources

A 5-item measure of situational attribution was included in this research based on the theory of Weiner (1985). According to this theory external factors are those which focus others rather than the self. Participants were asked to rate in the Likert scale starting from 0 (not at all) ending at 5(very much) the extent to which the environment of the study, the quality of the

material, the task complexity, the researcher in the lab, and the instructions of the task were responsible for the received feedback ($\alpha=0.913$). It was hoped that participants in the conditions in which they felt more threatened would project their shortcomings more on the situational factors therefore report higher scores of situational attributions which is based on the aforementioned work of Sherwood (1981).

Although the data showed no significant effect on situational attributions, as it can be seen in Figure 3, the trend suggests that participants expressed higher situational attributions with the increase in the score of threat (this measure was developed for this thesis with its α being equal to 0.864). Based on the theory in the work of Sherwood (1981), it can be argued that our findings are potential evidence suggesting that the reason for this pattern is the element of the threat because the theory suggests that the greater the threat, the more projection onto others. However, this evidence does not address the mediation role of threat to resources as the mediating factor, but provides a new insight for the direction of future research.

However, one unexpected result found shown in the following Figure 2 is that participants in the high effort negative disconfirmation were supposed to report the highest scores of the situational attribution, according to the theory, but I found the opposite. I believe that it is because of the design of the study which pushed participants to attribute their failure to an internal factor. This element has been deleted for the next study so that participants can freely express the reason for their failure and then this theory and its prediction can be revisited.

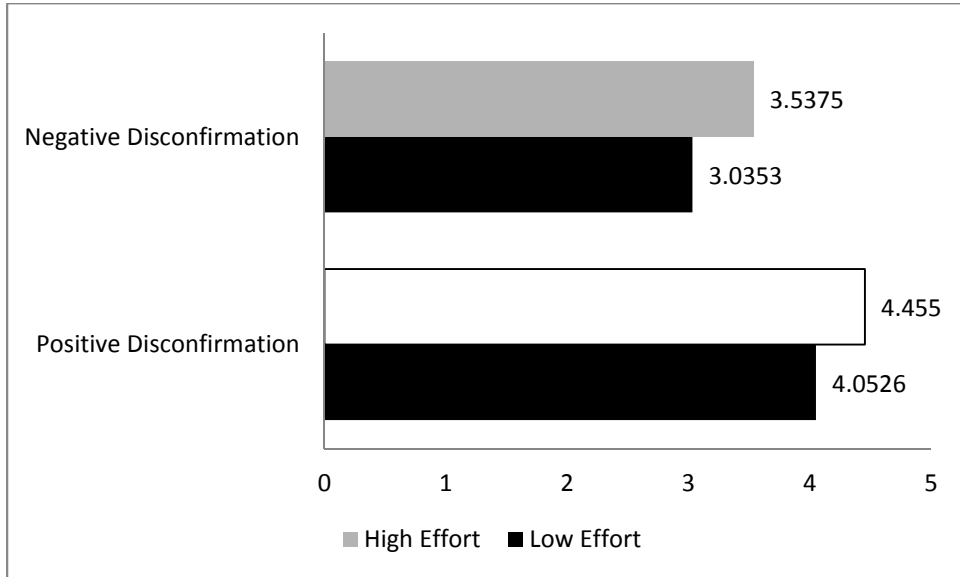


Figure 2- Scores of Situational Attributions for the Conditions of the Study

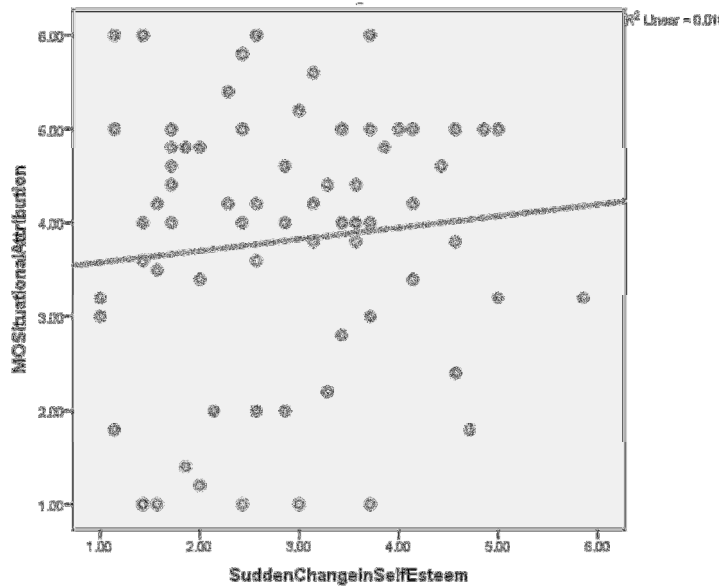


Figure 3- Situational Attribution Scores based on a Measure of Threat

In addition to this indirect method, two measures were used to capture the threat to self-esteem directly. The first measure was the measure of self-esteem developed by Rosenberg (1965) and the second measure, called sudden change in self-esteem, was developed for this

research. Participants were asked on a Likert scale from 0 (not at all) to 5(very much) the extent to which the feedback they received made them question their ability in painting, made them sad for a moment about their abilities in general, reflected their lack of skill in painting, made them more concerned about doing a task like this in the future, helped them understand they are not good at painting, made them question their abilities in areas other than their major and made their day less satisfactory in terms of their view of themselves ($\alpha=0.864$). The Rosenberg (1965) scale showed no significant difference between conditions ($P=0.2$). However, for the other measure of the threat, the difference between conditions of high-effort negative disconfirmation ($M= 3.366$) and high-effort positive disconfirmation ($M=2.776$) was shown by the simple effect analysis of univariate analysis of variance to be close to marginal significance ($F(1,68)=2.242$, $P=0.139$). These two conditions are reported because according to the theory of this current work, the most and least threat happen in these two conditions with the highest threat in the high effort-negative disconfirmation condition and lowest threat in the high-effort and positive disconfirmation condition.

Task Difficulty

One of the interesting findings of this work is in regards to the analysis surrounding perceived task difficulty (shown in Figure 4). The measure of task difficulty in the work of Robinson (2001) was used. This measure asks participants the extent they feel the task is easy and interesting, and whether they want to do the task again, whether they feel relaxed doing the task and whether they did well in the task($\alpha= 0.708$). A 2×2 analysis of variance showed only a main effect of type of disconfirmation on the measure of task difficulty ($F(1,68)=13.638$, $p=0.000$) where $M_{\text{negative disconfirmation}}= 3.023$ and $M_{\text{positive disconfirmation}}=2.40$ meaning that

participants in the negative (positive) disconfirmation perceived the task to be less (more) difficult, while the opposite was expected.

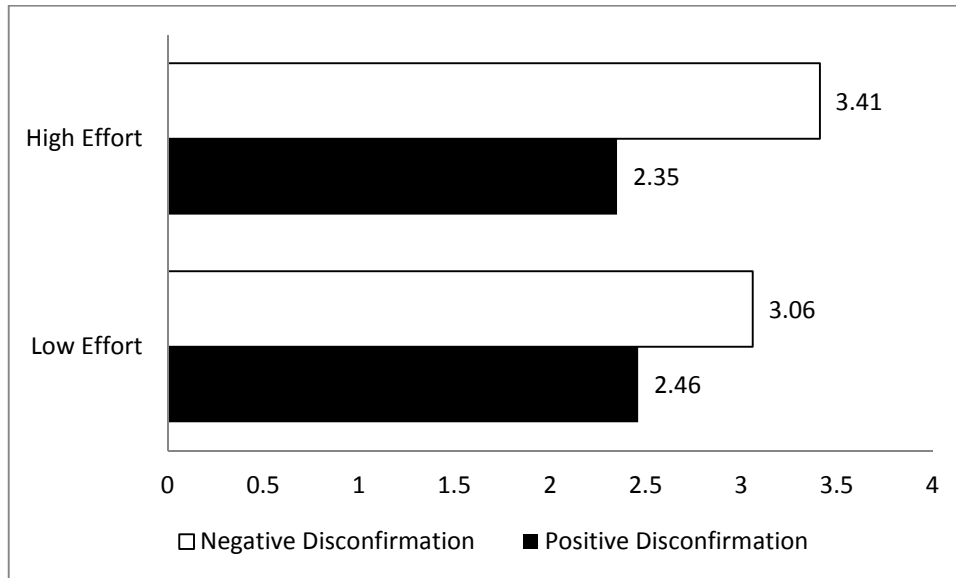


Figure 4- Scores of Task Difficulty in Four Conditions of the Study

Feelings

The PANAS measure of feelings (Watson, Clark and Tellegen 1988) was used to monitor participants' feelings. A 2x2 analysis of variance revealed no significant effect between type of effort for the positive ($F(1,68)= 0.730, p=0.396$) or for negative emotions ($F(1,68)= 0.154, p=0.696$) suggesting that emotion has nothing to do with the findings.

Discussion

Results of study 1 indicate that in the event of the internally attributed negative disconfirmation, the high effort does not result in a high favorable valuation but induces the least favorable valuation of the outcome as individuals in the high effort- negative disconfirmation condition expressed the lowest scores on price.

Study 2

Unlike Study 1, in the current study participants did not read any material suggesting how professionally designed the study and materials were. The goal of this decision was to relax the internal attribution requirement for the effect to happen. There were two motivations for this decision. First, as argued earlier, although Weiner (1985) suggests that the magnitude of the threat to disconfirmed expectations' is directly related to the extent that this disconfirmation is attributed to an internal factor, Laws and Rivera (2012) show that disconfirmation is threatening even without internal attribution. Second, the manipulation check used in study 1 for the internal attribution of the blame was not entirely successful as it revealed that it was a challenge to convince participants to believe that the negative feedback they received was due to their own capabilities. This challenge suggested two possible directions for Study 2.

First, the strength of the manipulation could be increased to convince participants to attribute the blame for the negative feedback internally. However, this solution was not of interest because it was important for the effects to be acquired with a subtle manipulation to address the robustness of the effects and to avoid demand effects. Moreover, it was believed that the different strength of the manipulations may induce different levels of threat which may in turn result in inconsistencies between the findings of Study 1 and 2 due to the differences in the levels of threat.

In addition, in Study 1, participants were given ten attributions (five internal and five external) to choose from. There was a concern that participants did not endorse the five internal attributions, not because those attributions had no role, but because the options were so limited that participants were not able to find the appropriate internal attribution. This limitation suggested that relaxing the conditions for the internal attributions and instead giving participants

an open-ended question so that they could express the proper justifications of blame. This builds on Laws and Rivera (2012) who suggest that negative disconfirmation is threatening regardless of the source of the attribution.

Methodology

This study was a 2(Effort: high vs. low) \times 2(Expectation disconfirmation: negative vs. positive) between participants design. Participants (N=126, Female=47, Male=76 and 2 who failed to report their gender) were university students taking the introduction to marketing course at the Asper School of Business at University of Manitoba in the 2014 fall semester. These participants took part in exchange for course credit.

In this study (study materials can be found in Appendix-C), there were four conditions, low effort-positive disconfirmation, low-effort-negative disconfirmation, high effort-positive disconfirmation and high effort-negative disconfirmation similar to Study 1. The procedure for Study 2 was similar to that used in Study 1 with the few exceptions as outlined above. Further, after participants were asked to indicate the price of their paintings, they were given space to express the reason why they thought they received the feedback in an open-ended manner.

Measures

The manipulation check to show the level of effort in the low and high effort conditions was the time taken to complete the task, the same as was used in Study 1. A single item measure was used as the manipulation check of expectation disconfirmation based on the work of Oliver (1977). After receiving the feedback, participants expressed the extent to which their expectation was confirmed or disconfirmed on a seven-point scale where 1=much worse than expected and 7 = much better than expected.

Results

Participants with missing data were removed from the sample (N=19) as they were either missing their feedback mark or the mark they gave themselves. These two marks are needed because they are used to determine whether participants were assigned to the right disconfirmation conditions. For example, participants in the positive feedback condition must receive a higher mark as compared to their self-given mark. A further three participants were deleted due to the mistakes on the part of the lab assistants in assigning the feedback. Specifically, these mistakes led participants in the negative feedback condition to receive a higher mark than what they have given themselves (N=2), or participants in the positive feedback condition receiving a lower mark than what they have given themselves (N=1).

Preliminary Analyses

The manipulation check for effort shows only a significant main effect of type of effort on the taken time to fulfill the task ($F(1,100)=223.531$, $P=0.000$, $M_{\text{low effort}}=6.091$ mins, $M_{\text{high effort}}=18.212$ mins) which shows that the manipulation check for the effort was successful. Also, the manipulation check for the expectation disconfirmation shows only a main effect of the type of disconfirmation on the expectation disconfirmation measure ($F(1,97)=302.379$, $P=0.000$, $M_{\text{negative disconfirmation}}=2.33$, $M_{\text{positive disconfirmation}}=6.40$) there by showing the manipulation check was successful for expectation disconfirmation.

Hypothesis Testing

Results of a 2 (effort) x 2 (expectation disconfirmation) univariate analysis of variance revealed a marginally significant interaction on price ($F(1,95)=3.069$, $p=0.083$) which is depicted in the following figure.

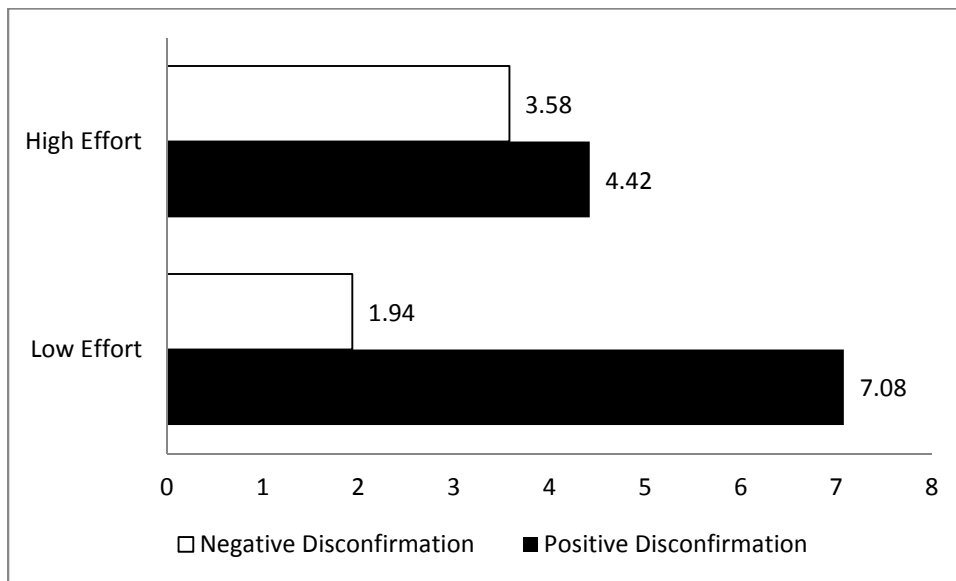


Figure 5- 2x2 ANOVA, DV: Price, IVs= Type of effort, Type of disconfirmation

The prices put on the paintings were significantly different with the lowest prices in the low-effort/negative disconfirmation condition ($M=1.94$) and highest in the low-effort/positive disconfirmation condition ($M=7.08$, $F(1,95)=8.49$, $p=0.004$). Moreover, the simple effects analysis demonstrates that the type of disconfirmation made no significant difference for the high effort conditions ($M_{\text{high effort, negative disconfirmation}}=3.58$, $M_{\text{high effort, positive disconfirmation}}=4.42$). This finding is inconsistent with Study 1 and will be discussed in a later section.

Information about the means and standard deviations of DV (price) in each of the above conditions can be found in the following table:

Type of Effort	Type of Disconfirmation	Mean	Standard Deviation	N
Low	Negative	1.9442	2.84820	26
	Positive	7.0845	8.79563	22
	Total	4.3002	6.75137	48
High	Negative	3.5839	4.58278	28
	Positive	4.4152	7.16279	23
	Total	3.9588	5.83866	51
Total	Negative	2.7944	3.89994	54
	Positive	5.7202	8.02477	45
	Total	4.1243	6.26757	99

Table 3- Means and Standard Deviations of DV in each Condition of the Study

Also, in Table 4 below the bivariate correlations among variables of the study can be found.

		Type of Effort	Type of Disconfirmation	DVPrice	SELFESTEEM
Type of Effort	Pearson Correlation	1	.023	-.027	-.064
	Sig. (2-tailed)		.816	.788	.521
	N	104	104	99	103
Type of Disconfirmation	Pearson Correlation	.023	1	.234*	.118
	Sig. (2-tailed)	.816		.020	.235
	N	104	104	99	103
DVPrice	Pearson Correlation	-.027	.234*	1	-.117
	Sig. (2-tailed)	.788	.020		.249
	N	99	99	99	98
SELFESTEEM	Pearson Correlation	-.064	.118	-.117	1
	Sig. (2-tailed)	.521	.235	.249	
	N	103	103	98	103

*. Correlation is significant at the 0.05 level (2-tailed).

Table 4- Bivariate Pearson Correlations Among Variables

Feelings

Feelings of the participants were asked using the PANAS measure (Watson, Clark and Tellegen 1988) and factor analysis suggested that feelings should be categorized into two major groups of positive ($\alpha=0.912$) and negative feelings ($\alpha=0.900$). The univariate ANOVA suggested no significant effect of the type of effort and the type of disconfirmation on negative ($F(1,98)=0.005$, $p=0.944$) and positive feelings ($F(1,98)=0.168$, $p=0.686$).

Discussion

The results of study 2 indicate that low effort and positive disconfirmation now lead to a high favorable valuation of the painting as compared to the previous study. This finding will be discussed in more detail in the general discussion.

General Discussion

Three studies, one pre-test and two main studies, have been done to test the strength of the effort justification effect. This effect has recently attracted a great deal of attention and marketers have started to apply this effect in many contexts (e.g. Norton et al. 2012). For example, the basic tenet of this effect which couples higher effort with a higher favorable valuation has been used by managers in cook-your-own-food restaurants hoping that the increased effort invested in the restaurant experience by being responsible for one's own cooking results in a higher favorable valuation of the experience.

A pre-test was conducted to address two issues. First it was conducted to test the potency of the effort justification theory in the no-threat condition and secondly to test the task of painting as the new setting for the labor element of the study. In the pre-test, it was shown that participants who invested higher effort in the task of painting expressed higher valuation of their paintings. Study 1 was intended to add the element of threat using the construct of expectation disconfirmation suggested by the previous literature. The findings in this study show when high effort does not necessarily result in a favorable valuation of the outcome. More specifically, high effort surprisingly results in a lower favorable valuation of the outcome and that situation is when the expectations of the outcome of the labor are negatively disconfirmed. Moreover, the findings add to those of Norton et al. (2012) by arguing that completion of the task is not the only factor affecting the relationship between labor and love on the grounds that in this study, both groups of participants in the negative and positive disconfirmation condition have completed the tasks given to them. The distinguishing factor making the difference supported by this thesis is the disconfirmation of the expectation (which is thought to pose threat), not the potential completion or not of the task.

The theory used in the Study 1 was reexamined for Study 2. First, expectations should be disconfirmed and second individuals have to attribute the reason for the disconfirmation internally so threat is felt. When these two steps were followed in study 1, the predictions came true and the results were shown in the high effort condition. However, it was of interest to show the same interaction between the type of effort and the type of disconfirmation in the low effort condition and it was thought that relaxing the internal attribution step of the theory will result in this pattern. The results of study 2 support this claim and reveal that in the low effort condition, participants favored their painting least when it was accompanied by negative disconfirmation.

Patterns of the findings in study 1 and 2 are slightly different and this difference can be explained in several ways. First, the sample size of study 1 was 71 and may not provide enough participants which in turn results in a lower power for the analyses. Moreover, this difference highlights the importance of the internal attribution criterion for the effect to happen. In study 1, when participants were asked to internalize the reason for their failure, according to the theory, their self-esteem may have been threatened which in turn resulted in a lower favorable valuation in the high effort condition, while in the study 2, when the internal attribution criterion was relaxed, the results were seen in the low effort condition. In addition, part of the difference between the patterns of the results may have been due to the different procedures taken for the study 1 and 2. Also, the commonality between the study 1 and 2 serves the theory of the current research. Regardless of the condition in which the main effect was seen, negative disconfirmation interacted with the type of effort-high or low- and reduced the favorable valuation to its minimum.

The theoretical contribution of this work is tied to the importance of the effort justification effect because this work addresses situations in which this well-known effect does

not apply. Shifting attention to the inverse phenomenon, this thesis postulated that the strength of the relationship between labor and a favorable valuation of the outcome can be mitigated if labor is not accompanied by positive expectation disconfirmation. The underlying phenomenon for this effect was predicted to be the threat factor. The current research reveals that threatening labor reduces the favorable valuation of the outcome. Specifically, when the expectations of the outcome of the labor are negatively disconfirmed, the labor does not increase the favorable valuation, but also it works as a threatening factor resulting in a reduced favorable valuation of the outcome.

In sum, theoretically, the current research contributes to the literature by integrating COR theory into that of effort justification to reveal situations in which effort does not result in favorable valuations. From a managerial standpoint, this research suggests that those companies that are relying on the premise that labor leads to love need to be aware of the conditions under which this effect does not hold. Moreover, knowing the reason for such phenomenon can make companies such as IKEA more efficient in making customers pay for what they put effort in.

The idea that is used in IKEA stores all around the world where IKEA stores are distinguished because of their unique definition of finished products is that in the IKEA's definition of finished products, products are considered final in their production right before the assembly and customers are responsible for assembling their own products. This comes with several benefits for both IKEA and customers. First, IKEA has used another method to increase the amount of effort invested by customers. In particular, IKEA uses the task of assembly as a means of increasing the effort inputted by customers and this increased effort is predicted by effort justification theory to increase the favorable evaluation of the consumption. Secondly, IKEA uses this effect by putting its own twist on it where not only the task of assembly is left to

the customers, but customers are given several customization options for the products. This customization which suits the product for the specific needs of the customers has been shown by Franke et al. (2010) to increase the valuation of the products in the eyes of the customers.

This customization option requires a closer look. This customization option has been argued by Franke et al. (2010) to be used to further increase the valuation of the product in the eyes of the customer. However, from the managerial point of view, this customization option increases the production cost which in turn increases the price for the customers which consequently can decrease the favorable valuation of the price-sensitive customers. As a result, one question that arises is if the mere increase in the effort invested by customers increases the favorable valuation of the product, why does giving customers the customization option which in fact comes with its own sets of dissatisfaction resulting from higher prices?

In fact, this customization option may be a way of reducing the felt threat for the high-effort needed for assembly of some products (such as big-tables, complicated electronic devices, etc.). Customers are given the customization option so that they can say at the end of the day that they have gone through this high level of effort not because the company wants to reduce its assembly line labor cost but because the company wants customers to get what suits their needs the best. In short, IKEA offers the customization options to counteract the felt threat by customers in the high-effort assembly tasks. The current research digs deeper into the element of the threat when it comes to effort justification theory showing that the high effort coupled with the high level of the threat not only does not result in higher favorable valuations, but also results in the least favorable valuation of the products, the point that IKEA has realized and countered by giving the customization option to customers as a remedy for this felt threat for highly effortful assembly tasks. The importance of the findings of this research requires no further

emphasis when realizing the fact that this research extends the whole theory of the effort justification by showing the instances that the effect does not hold and higher effort does not result in a higher favorable valuation as predicted by the theory, but a lower favorable valuation. A closer review of the findings of the conducted studies provides support for the contribution of this research.

Future research must focus more on the reason why this phenomenon happens. The theory put in place in this current work suggests that the “threat to self-esteem” representing the bigger construct of the “threat to resources” is the reason for the phenomenon happening. A measure of “threat to self-esteem” accompanied by a mediation analysis must be used to capture the mediating role of the threat to self-esteem. However, future research must be aware of the problems in self-report of self-esteem and attributions based on the level of self-esteem argued by Fitch (1970). According to Fitch (1970), people with low self-esteem mostly attribute the reason for their failures to internal factors, while individuals with high self-esteem do the opposite.

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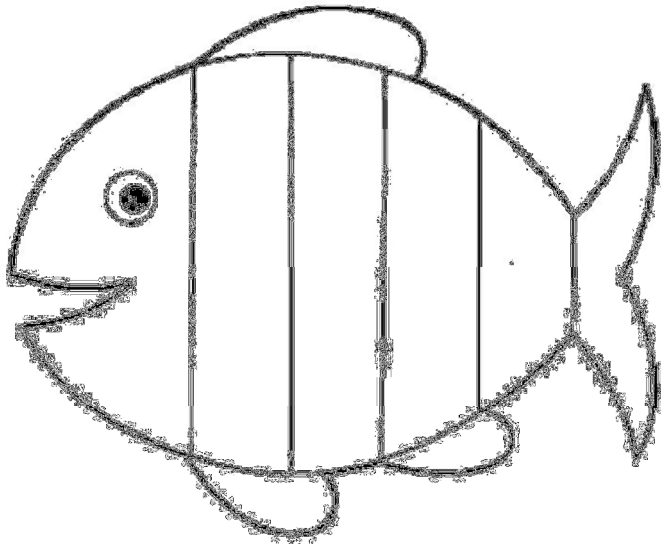
Appendixes

Appendix-A: Pretest Study Materials

Low Effort Condition Instruction

a) Introduction

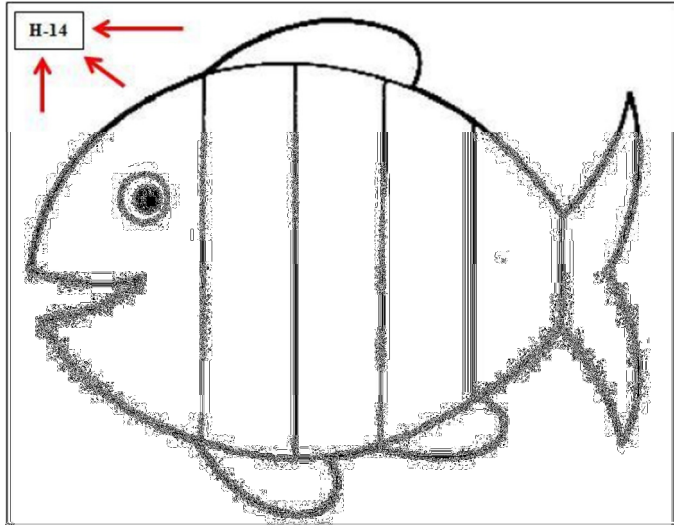
In this study, you are asked to first color a picture of a fish and then answer some questions about it. Please complete the steps of the coloring task as presented in the next pages.



Before proceeding to the next section, please answer the following question:
On a scale from 1 to 7, how well do you think you can paint the fish?

b) Code Entering

On your table, you can find a picture of a fish, please take the picture. As shown in the following, on the upper left side of the picture, you can find a code. (There might be a code on your Ziploc as well, but please **IGNORE** that code and just enter the code on the picture of the fish, as shown below). The code shown in the following picture is different from the code of the picture that you have. Therefore, please enter the code on **your** picture, not the code on the following picture.



Please enter the code here:

c) Material Checking



On your table, you can also find a Ziploc bag and a basket. In the Ziploc, you can find **three main colors** of **BLUE**, **RED** and **YELLOW** in addition to a **glove**, a **brush**, and **two hand-washes**. Please take out all these materials and put them on the placemat on your table. Please leave the empty Ziploc on your table.

If any of these materials is missing, please inform the researcher in the lab.

Moreover, in the basket on your table, you can see some extra materials. Please take the tissue (not a handwipe) from the basket. You need this tissue to place the used brushes on so that your placemat does not get dirty.

Please IGNORE the rest of the materials in the basket. If other students are using the other materials inside their baskets, it is because their study is different from yours.

d) Please Ask for Two More Brushes

Please raise your hand and request two more brushes from the researcher in the lab.

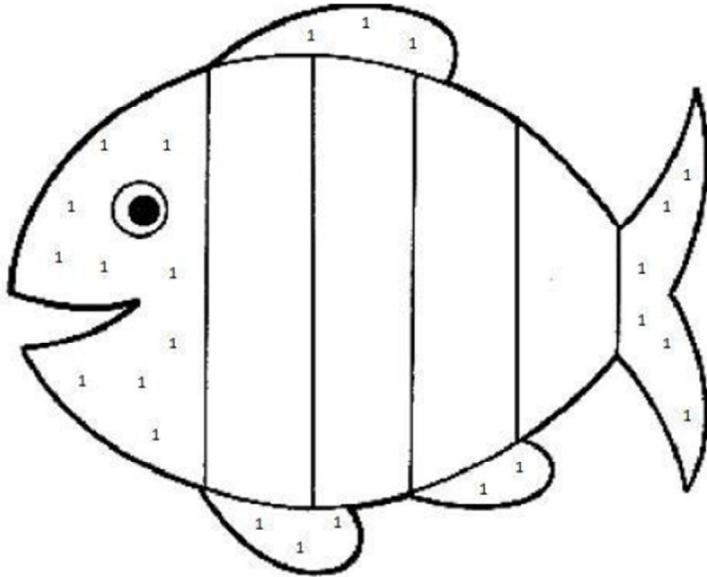
Please place these two more brushes on your placemat next to the other materials you have on your placemat.

e) Coloring Task

If you like, you can wear the glove provided to protect your skin from the paint (it will wash out with water).

Step 1: Coloring RED Sections

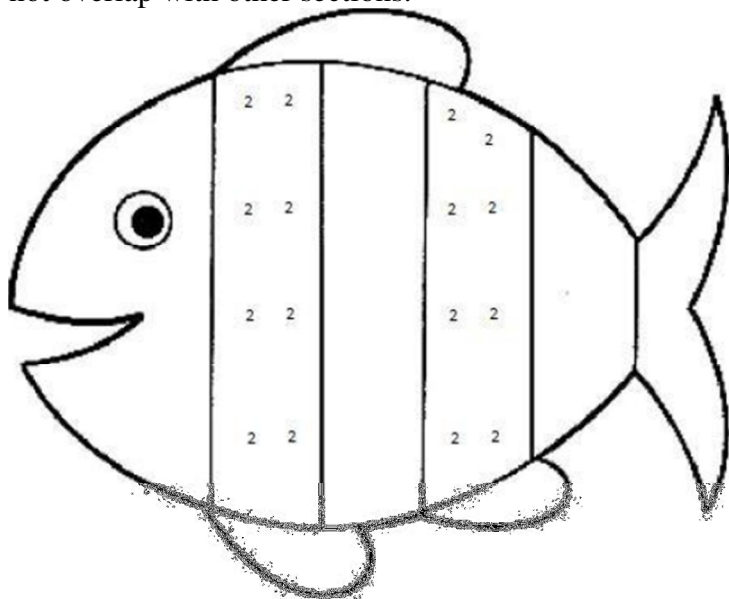
As you can see in the following picture which is similar to the picture you have, some portions of the picture have been marked by the number 1s. Please take a brush and then color these portions with the color **RED**. Please pay attention that the colors do not overlap with other sections.

**Notification**

After you are done coloring these portions, please leave this used brush on your tissue on the placemat and please **do not** use this brush again.

Step 2: Coloring BLUE Sections

Some portions of the picture below have been marked by the number 2s. Please take a **NEW** brush and then color these portions with the color **BLUE**. Please pay attention that the colors do not overlap with other sections.

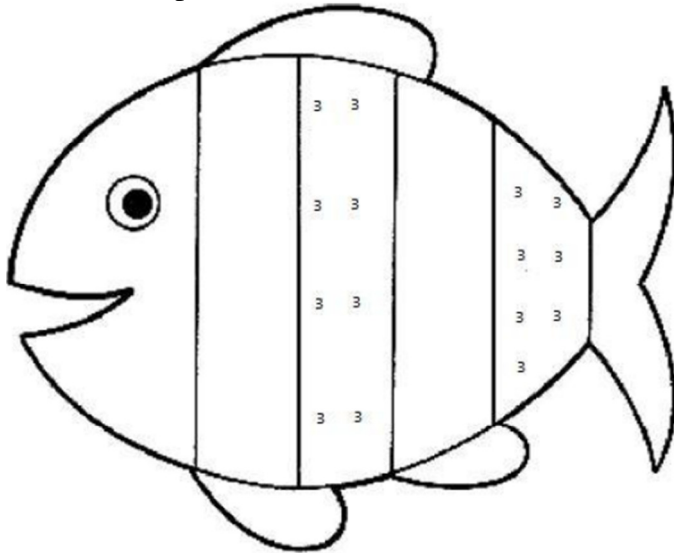


Notification

After you are done coloring these portions, please leave this used brush on your tissue on your placemat and **do not** use this brush again.

Step 3: Coloring YELLOW Sections

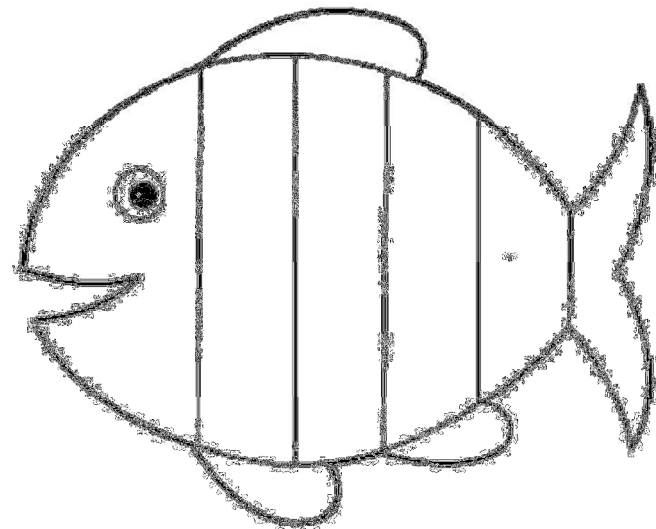
Some portions of the picture below have been marked by the number 3s. Please take a **NEW** brush and then color these portions with the color **YELLOW**. Please pay attention that the colors do not overlap with other sections.

**Notification**

After you are done coloring these portions, please leave this used brush on your tissue on the placemat and **do not** use this brush again.

High Effort Condition Instruction**a) Introduction**

In this study, you are asked to first color a picture of a fish and then answer some questions about it. Please complete the steps of the coloring task as presented in the next pages.

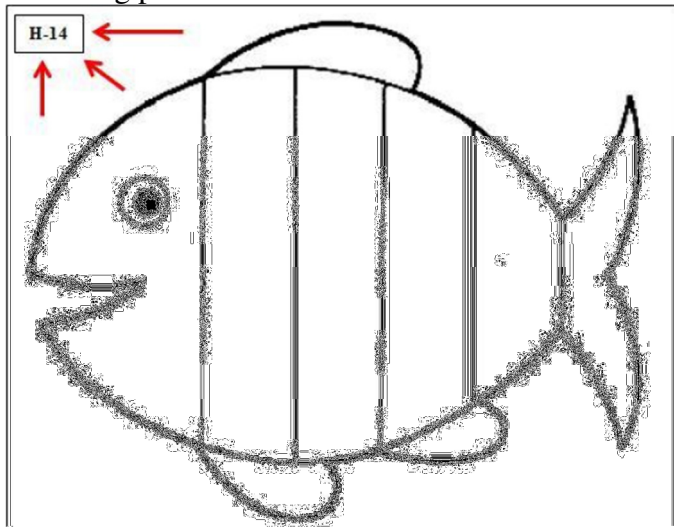


Before proceeding to the next section, please answer the following question:

On a scale from 1 to 7, how well do you think you can paint the fish?

b) Code Entering

On your table, you can find a picture of a fish, please take the picture. As shown in the following, on the upper left side of the picture, you can find a code. (There might be a code on your Ziploc as well, but please **IGNORE** that code and just enter the code on the picture of the fish, as shown below). The code shown in the following picture is different from the code on your picture. Therefore, please enter the code on **your** picture, not the one in the following picture.



Please enter the code here:

C) Material Checking

On your table, you can also find a Ziploc (plastic container) and a basket. In the Ziploc, you can find **three main colors** of **BLUE**, **RED** and **YELLOW** in addition to a **Glove**, a **Brush**, and **Two Handwipes**. Please take out all these materials and put them on the placemat on your table.



In the basket, you can find a **Scissor**, **Three Transparent Bowls**, **Five Handwipes**, **Four Popsicle Sticks**, **White Paper**, **Glue** and a **Tissue**.

If any of these materials is missing, please inform the researcher in the lab.

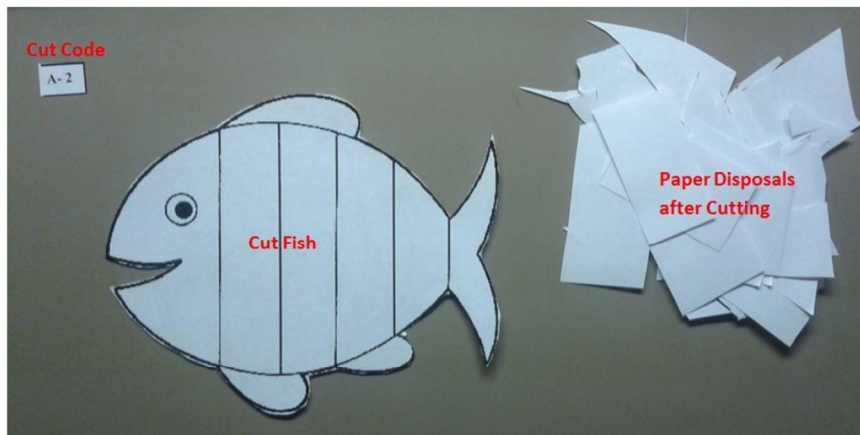
d) Cutting Task

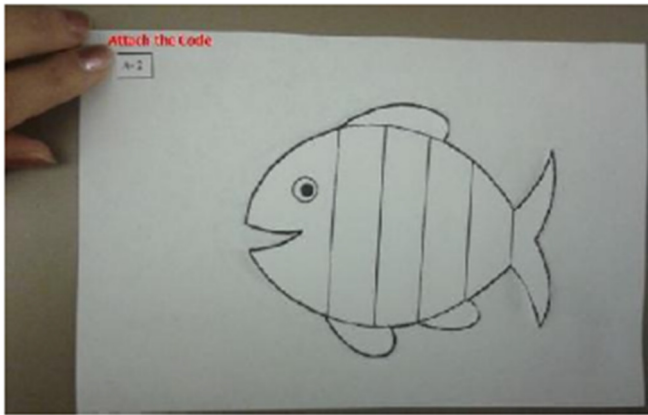
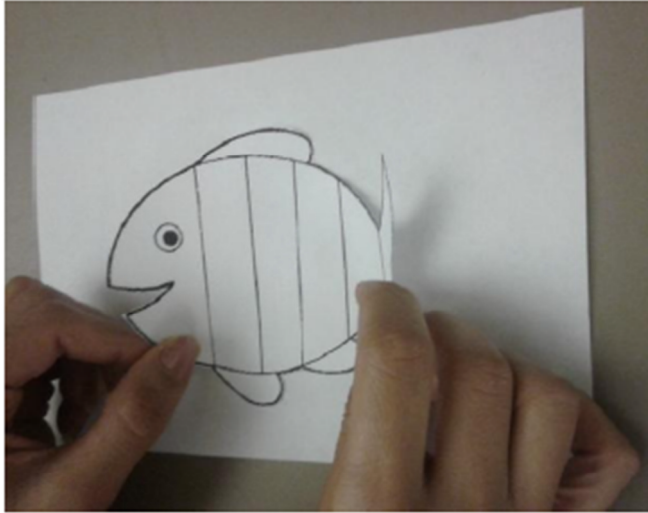
For this task, we ask you to please take the scissor from the basket and cut the paper around the picture of the fish. As a result of this task, you are left with the picture of a fish without any extra paper attached to it, as shown below. Then, please also cut out the code.

Please be very careful in cutting so that all the edges are clear. The following picture is just to guide you through the process and it does not present a perfect work. Therefore, please pay attention.

e) Gluing Task

Now that you have cut the picture and the code, please attach these pieces to the white paper provided using the glue from the basket. **Please make sure that the fish picture is in the middle of the paper and the code is on the left upper side of the paper.**





f) Mixing Colors

If you want you can wear the glove provided to protect your skin from colors (the colors are washed out easily).

For this study, you are asked to color a sketch of a fish using three colors of **ORANGE**, **PURPLE** and **GREEN**. However, the colors that you have been provided with are **BLUE**, **RED** and **YELLOW**. As a result, you should mix these three main colors to get the required colors of Green, Purple, and Orange. For instructions of mixing colors, please keep reading.

In the basket on your table, you can find three transparent bowls. Please take them out and put them on your pad. You can also find a tissue in your basket. Please also put that tissue on your placemat. You need this tissue in the next stages to put your disposals on so that your placemat does not get dirty.

Step 1:

In your basket, you can also find Popsicle sticks. Please take one Popsicle stick. Using this Popsicle stick, please put half of the Yellow color in one bowl and other half in another bowl. After you are done, please leave the used Popsicle stick on your tissue on your placemat and please **do not** use it again.

Step 2:

Then, take **another new** Popsicle stick from your basket. Using this Popsicle stick, please put half of the red color in the empty bowl (the other two bowls have yellow colors in them). After this step, please put the other half of the red color on one of the yellow colors and mix the colors using the same Popsicle stick so that you can get the **orange** color. After mixing the colors, leave the used Popsicle stick on the tissue and never use it again.

Please Check:

After these steps, what you have is a bowl with yellow color in it, a bowl with orange color in it and a bowl with red color in it.

Step 3:

Now please take another **new** Popsicle stick from the basket. Using this Popsicle stick, please put the half of the blue color on the yellow color and mix the colors so that you have the **green** color. After mixing the colors, please leave this Popsicle stick on the tissue and **do not** use it again.

Step4:

Afterward, please take the last **new** Popsicle stick from the basket. Using this Popsicle stick, please put the other half of the blue color on the red color so that you get the **purple** color. Please leave the stick on your tissue and **do not** use it again.

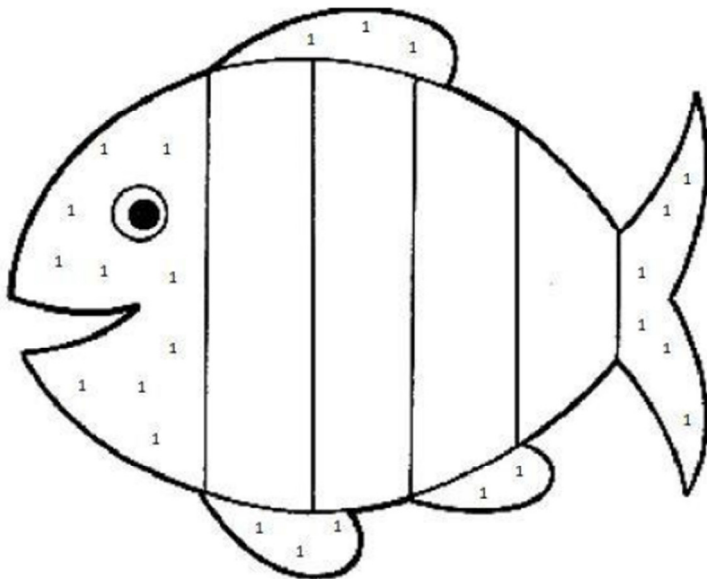
Please Check:

After all these steps you are left with three bowls with colors of **Purple, Green and Orange**.

g) Coloring Task

Step 1: Coloring ORANGE Sections

As you can see in the following sketch which is similar to the sketch you have, some portions of the picture have been marked by the number 1s. Please take the brush and then color these portions with the color **ORANGE**. Please pay attention the colors do not overlap with other sections.

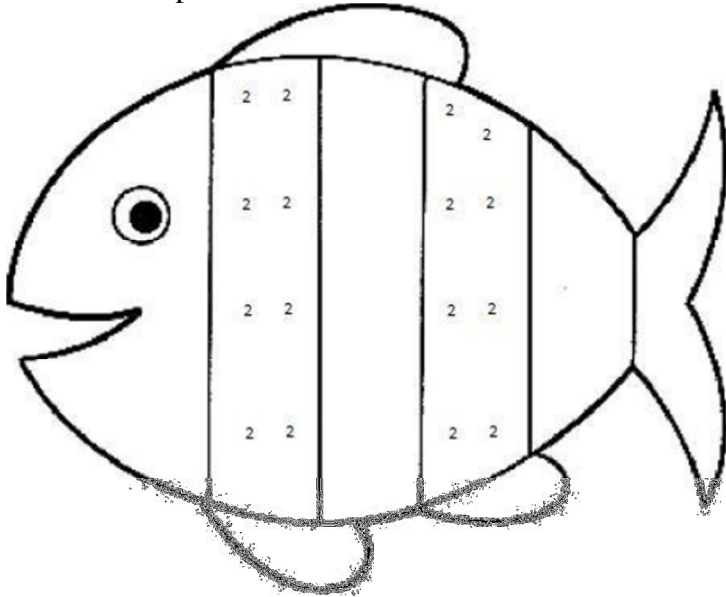


Notification

After you are done coloring these portions, please clean the brush using handwashes **carefully**. **The reason is that you only have this brush for coloring.**

Step 2: Coloring PURPLE Sections

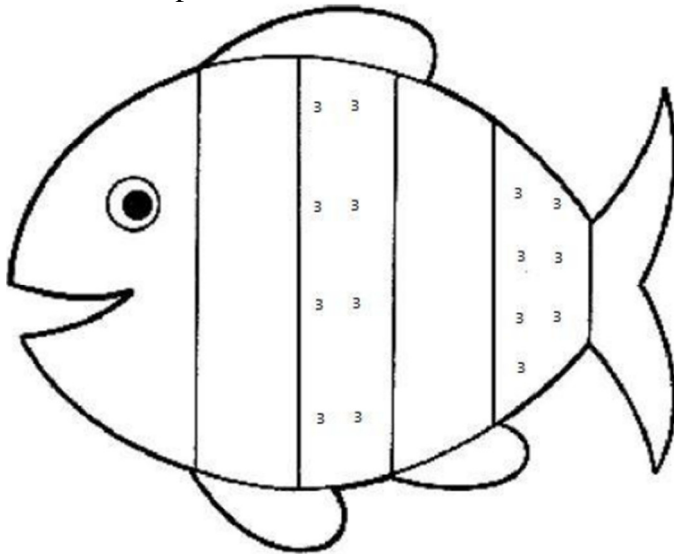
Some portions of the picture below have been marked by the number 2s. Please take the **same** brush and then color these portions with the color **PURPLE**. Please pay attention that the colors do not overlap with other sections.

**Notification**

After you are done coloring these portions, please clean the brush using handwashes **carefully**. The reason is that you **only** have this brush for coloring.

Step 3: Coloring GREEN Sections

Some portions of the picture below have been marked by the number 3s. Please take the **same** brush and then color these portions with the color **GREEN**. Please pay attention that the colors do not overlap with other sections.

**Notification**

After you are done coloring these portions, please leave this used brush on your placemat and **do not** use this brush again.

Questions for Both Conditions

Now that you have colored the picture, the coloring task is finished. Thank you for being patient and going through the instructions. It is appreciated :)

Please proceed to the questions' section in which you will be asked some questions about the task you have done.

Please indicate that how much time in minutes do you think it has taken you to color the picture?

Please pay attention to give the most accurate data. Please enter the approximate minutes here:

The marketing lab has been working for several years. As a result, the outcomes of the studies conducted in the lab such as hand-built materials, paintings, unused materials for studies are all piled up.

For inventory purposes, we have decided to make the best use of these materials and to raise money for charity purposes and sell these materials.

As part of this plan, the painting that you have made may be sold in this charity event. Since you have colored this painting and know better than anyone else the value of it, please put a price on your painting.

Please enter the price in CAD here:

1) Before the experiment is over, we would like to see how you are feeling right now:

0 (not at all) 1 2 3 4 5 (very much)

Interested

Distressed

Excited

Upset

Strong

Guilty

Hostile

Scared

Hostile

Enthusiastic

Proud

Irritable

Alert

Ashamed

Inspired

Nervous

Determined

Attentive

Jittery

Active

Afraid

- 2) Please answer the following questions:
0 (not at all) 1 2 3 4 5 (very much)
I usually find the task of painting interesting.
I usually have fun doing painting.
I usually get involved when I am doing painting.
I usually enjoy painting.
I usually find time flies when I am doing painting.
When painting, I am usually bored.
When I am painting, I wish the task would end quickly.
In painting, I often daydream instead of thinking about what I am painting.
- 3) What do you think about the requested task for this study?
0 (not at all) 1 2 3 4 5 (very much)
I thought the task was easy.
I felt relaxed doing this task.
I did not do well on this task.
I thought the task was not interesting.
I do not want to do more tasks like this.
- 4) Right now, you feel:
0 (not at all) 1 2 3 4 5 (very much)
Confident
A Sense of Accomplishment
Annoyed
Successful
Unfinished
Like you achieved something
Fulfilled
As if you completed something
- 5) What do you think about the picture of the fish?
0 (not at all) 1 2 3 4 5 (very much)
I liked the picture of the fish.
The picture is ugly.
The picture could have been better.
The picture is good but not suitable for the study.
Fish itself has been a good choice.
- 6) Finally, some demographic information:
Gender
Male Female
Age:
What language do you commonly speak at home with your family?
English Other
If you do not speak English at home, how long have you been speaking English?
What is your best guess on what this study was about?

At the end, we appreciate any suggestions or comments to improve this study:

Appendix-B: Study Materials for Study 1

The procedure of this study has been discussed in the method section. In the following you can find the questions specific for this study in accordance with the additions to the previous study.

The following is the page that participants had to read while waiting for the professional's feedback being received and printed:

Please read the content of this page carefully. We appreciate it :)

You are seeing this page because you are waiting for a professional painter to comment on your painting and mark it based on unbiased professional criteria.

The expert cooperating with us in the current study, Steven Pierce, is one of the top experts in the Art Department and has been doing this as his career for over 30 years.

He is one of the most well-known and respected people in the field.

Furthermore, the materials you used for this study are ranked as A-quality materials and. After choosing the materials, all of them have passed a very strict quality control test to ensure their highest quality.

Moreover, the instructions and procedures of the task have been designed by a famous expert process engineer in the department of Industrial Engineer, Emily Watson, to ensure that all instructions are clear and easy to understand. Besides, the temperature and the lighting of the room have been controlled by two of our top ergonomics engineers in the Department of Engineering, Naeim Ghasem and Maya Ellison who have won the seventh AEA engineering prize in May 2013.

All these careful considerations exist to ensure that no external factors affect your performance and **what you get is the result of your own effort and work**. In fact, all these considerations are in place for you so that you can get a sense of your abilities and skills in this task of painting. As a result, the external factors have been carefully controlled so that you can make sure that you and your abilities are tested, not the quality of materials or external factors.

Feedback Pages

Negative Disconfirmation Condition

Dear Participant,

I am regretfully writing to let you know that I have carefully analyzed your painting and you have received the following mark:

Your Mark is:

I am sorry.

Sincerely,

Steven Pierce

Positive Disconfirmation Condition

Dear Participant,

I am gladly writing to let you know that I have carefully analyzed your painting and you have received the following satisfactory mark:

Your Mark is Congratulations!

Sincerely,

Steven Pierce

Questions

- 1) In terms of the feedback that you will get from the expert shortly:
0 (Not at All) 1 2 3 5 6 (Very Much)
I expect to get a high mark
I will be satisfied with my work
My painting will reflect the fact that I will have done a good job in painting
My painting will reflect the fact that I have done well in the task
My painting will reflect the fact that I have done my best work in this task
I am not going to get a bad mark
- 2) The task and the result I have got
0 (Not at all) 1 2 3 4 5 (very much)
Made me question my ability in painting
Made me sad for a moment about my abilities in general
Reflected my lack of skill in painting
Made me more concerned about doing tasks like this in the future
Helped me understand that I am not good at painting
Made me worried about my abilities in general in the areas other than my major
Have made my day less satisfactory in terms of my view of myself
- 3) Please rank the following statements:
0 (Not at all) 1 2 3 4 5 (very much)
This is one of the best paintings that I could have colored
This painting is exactly as I wanted it to be
This painting is not as good as I thought it would be
I am satisfied with how I have completed the task

I have mixed feelings about how I feel about my painting
 My choice on how to complete the painting was a wise one
 If I could the task over again, I would paint the sketch in the same way
 I have truly enjoyed this task of painting
 I feel bad about my painting
 Doing this task of painting has been a good experience
 I am sure that I have done my best in this painting task
 Overall, I am satisfied with my painting

- 4) To what extent (good or bad) do you think each of the following factors resulted in the mark that you have received?

0 (Not at all) 1 2 3 4 5 (very much)

Quality of the study material such as paints, papers, etc.

The procedure of the study (e.g. the instructions of the task)

The researcher running the lab session

The factors in environment such as the temperature of the room, light, etc.

The task itself and whether it was complex or not

Your ability in painting

The level of effort you put into the task

The level of your involvement with the task

The fact that you have not invested enough energy in the task

The fact that you are better in other skills but not painting

- 5) In general the mark that I have received from our professional:

0 (Not at all) 1 2 3 4 5 (very much)

Is mostly because of the situational factors

Is mostly because of you and your abilities

- 6) In general, when it comes to painting:

0 (Strongly

Disagree) 1 2 3 4 5 (Strongly agree)

I feel I am a person of worth, at least on an equal basis with others

I feel that I have a number of good qualities

All in all, I am inclined to feel that I am a failure

I am able to do things as well as most other people

I feel I do not have much to be proud of

I take a positive attitude toward myself

On the whole, I am satisfied with myself

I wish I could have more respect for myself

I certainly feel useless at times

At times I think I am no good at all

- 7) Before the experiment is over, we would like to see how you are feeling right now:

0 (not at all) 1 2 3 4 5 (very much)

Interested

Distressed

Excited
 Upset
 Strong
 Guilty
 Hostile
 Scared
 Hostile
 Enthusiastic
 Proud
 Irritable
 Alert
 Ashamed
 Inspired
 Nervous
 Determined
 Attentive
 Jittery
 Active
 Afraid

- 8) Please answer the following questions:
 0 (not at all) 1 2 3 4 5 (very much)
 I usually find the task of painting interesting.
 I usually have fun doing painting.
 I usually get involved when I am doing painting.
 I usually enjoy painting.
 I usually find time flies when I am doing painting.
 When painting, I am usually bored.
 When I am painting, I wish the task would end quickly.
 In painting, I often daydream instead of thinking about what I am painting.
- 9) What do you think about the requested task for this study?
 0 (not at all) 1 2 3 4 5 (very much)
 I thought the task was easy.
 I felt relaxed doing this task.
 I did not do well on this task.
 I thought the task was not interesting.
 I do not want to do more tasks like this.
- 10) What do you think about the requested task for this study?
 0 (not at all) 1 2 3 4 5 (very much)
 The Task for this study was effortful
 The task was energy-consuming
 I put lots of effort into the task
 The task required little effort
 I had to work hard to complete the task

11) Right now, you feel:

0 (not at all) 1 2 3 4 5 (very much)

Confident

A Sense of Accomplishment

Annoyed

Successful

Unfinished

Like you achieved something

Fulfilled

As if you completed something

12) What do you think about the picture of the fish?

0 (not at all) 1 2 3 4 5 (very much)

I liked the picture of the fish.

The picture is ugly.

The picture could have been better.

The picture is good but not suitable for the study.

Fish itself has been a good choice.

13) Finally, some demographic information:

Gender

Male Female

Age:

What language do you commonly speak at home with your family?

English Other

If you do not speak English at home, how long have you been speaking English?

What is your best guess on what this study was about?

At the end, we appreciate any suggestions or comments to improve this study:

Appendix C

Cover Story in the Consent Form

Studies by Meredith Precious and Benjamin Handson suggest that the task of painting is a good reflection of people abilities in general. In a longitudinal study, they argue that from those people who painted well in their younger ages between 18-23, 87% had a more successful life in terms of their income and general measure of happiness developed by Stanford University. In this task we first ask you to paint a sketch of a fish and then we ask you some questions!

Positive Disconfirmation Feedback page

Dear Participant,

I, Steven Pierce, am gladly writing to let you know that I have carefully analyzed your painting and you have received the following great mark: Your Mark is _____ Congratulations! The high mark that you have happily received is because you have successfully managed to follow 7 major elements of a good painting in your effort. Given this performance, we are obligated to appreciate all your efforts and time that you have devoted to this task.

Negative Disconfirmation Feedback page

Dear Participant,

I, Steven Pierce, am regretfully writing to let you know that I have carefully analyzed your painting and you have received the following mark:

Your Mark is: _____ I am sorry. The low mark that you have received is sadly because you have failed to follow 7 major elements of a good painting in your effort. Despite this performance, we are still obligated to appreciate all your efforts and time that you have devoted to this task.

Added Questions

- 1) Please list all the reasons why you got the mark from our art professional:
Please type the number of the reasons you explained in the previous page

- 2) Please rank each statement below:
Self-doubt Scale (Oleson, K. C., Poehlmann, K. M., Yost, J. H., Lynch, M. E., & Arkin, R. M. (2000). Subjective overachievement: Individual differences in self-doubt and concern with performance. *Journal of Personality*, 68, 491–524.)

Self-Doubt Scale Items

1. When engaged in an important task, most of my thoughts turn to bad things that might happen (e.g., failing) than to good.
 2. For me, avoiding failure has a greater emotional impact (e.g., sense of relief) than the emotional impact of achieving success (e.g., joy, pride).
 3. More often than not I feel unsure of my abilities.
 4. I sometimes find myself wondering if I have the ability to succeed at important activities.
 5. I often wish that I felt more certain of my strengths and weaknesses.
 6. As I begin an important activity, I usually feel confident in my ability. (R)
 7. Sometimes I feel that I don't know why I have succeeded at something.
 8. As I begin an important activity, I usually feel confident in the likely outcome. (R)
-

3) Choice task

Fessler, D. M. T., Pillsworth, E. G., & Flamson, T. J. (2004). Angry men and disgusted women: An evolutionary approach to the influence of emotions on risk-taking. *Organizational Behaviour and Human Decision Processes*, 95, 107–123.

The choice task

This form to be filled out by the experimenter. Participant ID #: _____

READ ALOUD: There are four rounds in this game. For each round, you will choose one option, either option 1 or option 2. Each decision should be made independently of the decisions made in every other round. One round will be randomly selected, and you will be paid only according to the choice you made for that round.

Round A:

Do you prefer:

1. \$15 (guaranteed) OR 2. \$18.75 (16 out of 20; 80%)

Round B:

Do you prefer:

1. \$15 (guaranteed) OR 2. \$37.50 (8 out of 20; 40%)

Round C:

Do you prefer:

1. \$15 (guaranteed) OR 2. \$75.00 (4 out of 20; 20%)

Round D:

Do you prefer:

1. \$15 (guaranteed) OR 2. \$300.00 (1 out of 20; 5%)